

A complete listing of Claims is presented for ease of reference as follows:

21. (canceled)

22. (currently amended) ~~The method in accordance with Claim 21;~~ A method operative in a computer system for improving the performance of a database by determining whether or not to alter the fields of the database, having entities which hold a set of data values, said database including at least one set of linked entities, wherein the at least one set of linked entities contains a plurality of conceptual entities, each of the conceptual entities including a plurality of data values which are distributed amongst the plurality of the conceptual entities, comprising the steps of:

(i) determining an average read/write ratio of the plurality of data values distributed amongst the at least one set of linked entities in the database;

(ii) comparing the average read/write ratio of the database to a predetermined critical read/write ratio~~wherein the step (ii) for comparing the average read/write ratio of the database to said predetermined critical read/write ratio includes provisions,~~ so that said predetermined critical read/write ratio is calculated by carrying out the following steps:

(iia) providing data with regard to the time taken to perform a read operation and a write operation on a first implementation of the said database wherein said first implementation of a database comprises at least one set of linked entities;

(iib) providing data with regard to the time taken to perform a read operation and a write operation on a second implementation of the said database wherein the second implementation of the database comprises an aggregation of all data values stored in the at least one set of the linked entities;

(iic) calculating a read time difference between the time taken to perform a read operation on said first implementation of said database and on said second implementation of said database;

(iic) calculating a write time difference between the time taken to perform a write operation on said first implementation of said database and on said second implementation of said database; and

(iie) calculating the ratio between the read time difference and the write time difference to determine the critical read/write ratio for the database; and

(iii) if the average read/write ratio is greater than the critical read/write ratio, then performing the following method steps:

(iia) defining an additional entity table in the database; and

(iib) storing in the additional entity table an aggregation of said plurality of data values representing an aggregation of at least one of the plurality of conceptual entities, whereby the information defining the conceptual entity is obtained by performing a single read operation on the additional entity table;

(iv) altering the fields of the database when said average read/write ratio is greater than said critical read/write ratio.

23. (canceled) A method operating in a computer system using a CPU, memory, I/O unit and database on disk for modifying a database by determining whether or not to alter the fields of the database having entities which hold a set of data values, comprising:

- (a) providing at least one set of linked entities, in the said database, wherein the said at least one set of linked entities contains a plurality of conceptual entities, each of the conceptual entities including a plurality of data values which are distributed amongst the plurality of conceptual entities;

- (b) determining an average read/write ratio of the plurality of data values distributed amongst the at least one set of linked entities in the database;
- (c) comparing the average read/write ratio of the database to a predetermined critical read/write ratio;
- (d) determining if the average read/write ratio is greater than said the critical read/write ratio, to invoke;
 - (d1) defining an additional entity table in addition to the at least one set of linked entities;
 - (d2) storing means in said additional entity table, the aggregation of said plurality of data values representing an aggregation of at least one of said plurality of conceptual entities; and
 - (d3) reading said aggregation of said plurality of data values by performing a single read operation on said additional entity table to return the information defining at least one conceptual entity.
- (e) modifying the fields of the database when said average read/write ratio exceeds said critical read/write ratio.

24. (currently amended) ~~The method in accordance with claim 23;~~ A method operating in a computer system using a CPU, memory, I/O unit and database on disk for modifying a database by determining whether or not to alter the fields of the database having entities which hold a set of data values, comprising:

- (a) providing at least one set of linked entities, in the said database, wherein the said at least one set of linked entities contains a plurality of conceptual entities, each of the conceptual entities including a plurality of data values which are distributed amongst the plurality of conceptual entities;

- (b) determining an average read/write ratio of the plurality of data values distributed amongst the at least one set of linked entities in the database;
- (c) comparing the average read/write ratio of the database to a predetermined critical read/write ratio, including wherein said step
(e) includes establishing a predetermined critical read/write ratio, wherein said establishing of said predetermined critical read/write ratio further includes the steps of:
 - (ca) providing data with regard to the time taken to perform a read operation and a write operation on the data values which are distributed amongst the plurality of entities;
 - (cb) providing data with regard to the time taken to perform a read operation and a write operation on said additional entity table;
 - (cc) calculating a read time difference between the time taken to perform a read operation on the data values which are distributed amongst the plurality of entities and on said additional entity table;
 - (cd) calculating a write time difference between the time taken to perform a write operation on the data values which are distributed amongst the plurality of entities and on said additional entity table; and
 - (ce) calculating the ratio between said read time difference and said write time difference to determine the critical read/write ratio for the database.
 - (cf) not modifying said database when said average read/write ratio is less than said critical read/write ratio;
- (d) determining if the average read/write ratio is greater than said the critical read/write ratio, to invoke:
 - (d1) defining an additional entity table in addition to the at least one set of linked entities;

(d2) storing means in said additional entity table, the aggregation of said plurality of data values representing an aggregation of at least one of said plurality of conceptual entities; and

(d3) reading said aggregation of said plurality of data values by performing a single read operation on said additional entity table to return the information defining at least one conceptual entity.

(e) modifying the fields of the database when said average read/write ratio exceeds said critical read/write ratio.

25. (canceled)

26. (canceled)

27. (currently amended) ~~The electronic machine of claim 26 which utilizes the said computer program for improving the performance of the database, wherein in step (ii);~~ An electronic machine holding a computer, memory means, and electronic database which utilizes a computer program for improving the performance of said database including at least one set of linked entities, wherein the at least one set of linked entities contains a plurality of conceptual entities, each of the conceptual entities including a plurality of data values which are distributed amongst the plurality of the conceptual entities, said computer program including at least one instruction which, when executed by a computer system, is arranged to carry out the following steps:

(i) determining an average read/write ratio of the plurality of data values distributed amongst the at least one set of linked entities in the database;

(ii) comparing the average read/write ratio of the database to a predetermined critical read/write ratio, the predetermined critical read/write ratio is calculated by carrying out the following steps:

- (iia) providing data with regard to the time taken to perform a read operation and a write operation on a first implementation of the said database, wherein the first implementation of a database comprises at least one set of linked entities;
- (iib) providing data with regard to the time taken to perform a read operation and a write operation on a second implementation of the said database wherein the second implementation of the database comprises an aggregation of all data values stored in the at least one set of the linked entities;
- (iic) calculating a read time difference between the time taken to perform a read operation on said first implementation of said database and on said second implementation of said database;
- (iid) calculating a write time difference between the time taken to perform a write operation on said first implementation of said database and on said second implementation of said database; and
- (iie) calculating the ratio between the read time difference and the write time difference to determine the critical read/write ratio for the database

iii) if the average read/write ratio is greater than the critical read/write ratio, then performing the following steps:

- (iiia) defining an additional entity table in the database; and
- (iiib) storing in the additional entity table an aggregation of said plurality of data values representing an aggregation of at least one of the plurality of conceptual entities, whereby the information defining the conceptual entity is obtained by performing a single read operation on the additional entity table.